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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/753,091	01/07/2004	Vladimir Arkhipov	IMEC297.001AUS	2735

20995 7590 06/20/2005

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EXAMINER	
BLEVINS, JERRY M	

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 06/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/753,091	ARKHIPOV ET AL.	
	Examiner	Art Unit	
	Jerry Martin Blevins	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 10-26* is/are rejected.

7)☐ Claim(s) *8 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ ~~Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)~~ Paper No(s)/Mail Date *5/17/04,7/9/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Brian Healy
Primary Examiner

DETAILED ACTION

Claim Objections

Claims 9, 11, and 16 are objected to because of the following informalities:

The claimed "efficiency" of claim 9 has no antecedent basis in the indicated base claim 7. For examination purposes, examiner interprets claim 9 as if dependent on claim 8.

The claimed "optical signal" of claim 11 has no antecedent basis in the indicated base claim 9. For examination purposes, examiner interprets claim 11 as if dependent on claim 10.

The claimed "optical cable " in lines 3, 6, 10, and 12 of claim 16 has no antecedent basis. For examination purposes, examiner interprets "optical cable" as "optical fiber". Note that claim 22 also references the "optical cable." If correction of the above lack of antecedent basis includes replacing the "optical cable" of claim 16 with "optical fiber," this correction also needs to take place in claim 22.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 10-12, 14-20, and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent to Duggal et al, number 6,538,375 in view of US Patent to Desurvire et al, number 5,892,876.

Regarding claim 1, Duggal teaches an optic device comprising an optical cable (Figures 3,4, fiber light source 21) having a substantially axial symmetry (Figures 3,4), the optical cable comprising a transparent envelope (elements 26, 28, and 29, with element 28 transparent, column 6, line 29) surrounding a core (22); and a light source (21) comprising an inner electrode (28), an outer electrode (27), and an active area (23) located between the inner electrode and the outer electrode, wherein the light source and the optical cable are integrated (as fiber light source 21), and wherein the light source has an axial symmetry and is positioned coaxially with respect to the axis of the optical cable (Figures 3,4), and wherein the inner electrode comprises a transparent material (column 6, line 29) to permit light generated in the active area to propagate outside the light source and into the optical cable. Duggal does not teach that the core is doped with phosphorescent or fluorescent material. Duggal also does not teach that the transparent envelope comprises a cladding layer. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4)

doped with a fluorescent material (column 1, line 15, and column 3, line 38). It would have been obvious to one of ordinary skill in the art at the time of the invention to dope the core of Duggal with a fluorescent material, as taught by Desurvire. The motivation would have been to obtain a desired output signal, such as an optical oscillator or an optical amplifier (Desurvire, column 1, lines 7-11). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to surround the core of Duggal with the cladding of Desurvire. The motivation would have been to protect the core and to prevent leakage of light from the core.

Regarding claim 2, Duggal in view of Desurvire teaches the limitations of the base claim 1. Duggal also teaches that the envelope further comprises a jacket layer (Figures 3,4, element 26). The above justification for obviousness holds.

Regarding claim 3, Duggal in view of Desurvire teaches the limitations of the base claim 1. Duggal also teaches that the outer electrode comprises reflective material (column 13, line 28). The above justification for obviousness holds.

Regarding claim 4, Duggal in view of Desurvire teaches the limitations of the base claim 1. Duggal also teaches that the light source is flexible (column 4, lines 27,28). The above justification for obviousness holds.

Regarding claim 5, Duggal in view of Desurvire teaches the limitations of the base claim 1. Duggal also teaches that the light source comprises a mono or multi-layer organic light-emitting diode (OLED) (column 3, line 36). The above justification for obviousness holds.

Regarding claim 14, Duggal in view of Desurvire teaches the limitations of the base claim 1. Duggal also teaches that the device is configured for introspection (column 12, lines 35-49, Figure 14). The above justification for obviousness holds.

Regarding claim 10, Duggal in view of Desurvire teaches the limitations of the base claim 1. Duggal does not teach that the device is configured to generate optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to generate optical signals (column 1, line 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to configure the device of Duggal in view of Desurvire to generate optical signals, as taught by Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 11, Duggal in view of Desurvire teaches the limitations of the examiner interpreted base claim 10. Desurvire also teaches that the optical signal is substantially constant (for a given core radius) (column 3, line 67, column 4, line 1). The above justification for obviousness holds.

Regarding claim 12, Duggal in view of Desurvire teaches the limitations of the base claim 1. Duggal does not teach that the device is configured to amplify or repeat optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to amplify optical signals (column 1, lines 10,11). It would have been obvious to one of ordinary skill in the art at the time

of the invention to configure the device of Duggal in view of Desurvire to amplify optical signals, as taught by Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 15, Duggal in view of Desurvire teaches the limitations of the base claim 12. Duggal also teaches that the device is configured for endoscopy (column 12, lines 35-49, Figure 14). The above justification for obviousness holds.

Regarding claim 16, Duggal teaches a method of making an optical device, the method comprising forming an optical fiber having a substantially axial symmetry (Figures 3,4, fiber light source 21); surrounding a fiber core (22) of the optical fiber with a transparent envelope (elements 26, 28, and 29, with element 28 transparent, column 6, line 29); integrating a light source (21) with the optical fiber, the light source comprising an inner electrode (28), an outer electrode (27), and an active area (23) located between the inner electrode and the outer electrode; and positioning the light source coaxially with respect to the axis of the optical fiber (Figures 3,4), wherein the inner electrode comprises a transparent material (column 6, line 29) to permit light generated in the active area to propagate outside the light source and into the optical fiber. Duggal does not teach that the core is doped with phosphorescent or fluorescent material. Duggal also does not teach that the transparent envelope comprises a cladding layer. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38). It would have been obvious to one of ordinary skill in the art at the time of the invention to dope the core of Duggal with a

fluorescent material, as taught by Desurvire. The motivation would have been to obtain a desired output signal, such as an optical oscillator or an optical amplifier (Desurvire, column 1, lines 7-11). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to surround the core of Duggal with the cladding of Desurvire. The motivation would have been to protect the core and to prevent leakage of light from the core.

Regarding claim 17, Duggal in view of Desurvire teaches the limitations of the base claim 16. Duggal also teaches that the envelope further comprises a jacket layer (Figures 3,4, element 26). The above justification for obviousness holds.

Regarding claim 18, Duggal in view of Desurvire teaches the limitations of the base claim 16. Duggal also teaches that the outer electrode comprises reflective material (column 13, line 28). The above justification for obviousness holds.

Regarding claim 19, Duggal in view of Desurvire teaches the limitations of the base claim 16. Duggal also teaches that the light source is flexible (column 4, lines 27,28). The above justification for obviousness holds.

Regarding claim 20, Duggal in view of Desurvire teaches the limitations of the base claim 16. Duggal also teaches that the light source comprises a mono or multi-layer organic light-emitting diode (OLED) (column 3, line 36). The above justification for obviousness holds.

Regarding claim 23, Duggal in view of Desurvire teaches the limitations of the base claim 16. Duggal does not teach that the method further comprises generating optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a

cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to generate optical signals (column 1, line 10). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of generating optical signals, as taught by Desurvire, into the method of Duggal in view of Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 24, Duggal in view of Desurvire teaches the limitations of the base claim 16. Duggal does not teach that the method further comprises generating substantially constant optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured to generate substantially constant (for a given core radius) optical signals (column 1, line 10, column 3, line 67, column 4, line 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of generating substantially constant optical signals, as taught by Desurvire, into the method of Duggal in view of Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 25, Duggal in view of Desurvire teaches the limitations of the base claim 16. Duggal does not teach that the method further comprises performing at least one of amplification and repeating of optical signals. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38)

configured to amplify optical signals (column 1, lines 10,11). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of amplification of optical signals, as taught by Desurvire, into the method of Duggal in view of Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 26, Duggal in view of Desurvire teaches the limitations of the base claim 16. Duggal does not teach that the method comprises generating a laser. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) adapted to be used in optical fiber lasers (column 1, lines 5,6). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of generating a laser, as taught by Desurvire, into the method of Duggal in view of Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Claims 6, 13, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duggal in view of Desurvire as applied to claims 1-5, 10-12, 14-20, and 23-26 above, and further in view of US Pre Grant Publication to Inditsky, number 2003/0016930, and US Patent to Bulovic et al, number 6,297,495.

Regarding claim 6, Duggal in view of Desurvire teaches the limitations of the base claim 1. Duggal also teaches that the light source comprises an additional outer layer (29). Duggal in view of Desurvire does not teach that the additional outer layer is reflective. Duggal in view of Desurvire also does not teach that the outer electrode

(cathode 27) comprises transparent material. Inditsky teaches a light source (light guiding rod, LGR) with reflective cladding (page 14, paragraph 179). It would have been obvious to one of ordinary skill in the art to include the reflective outer layer of Inditsky in the device of Duggal in view of Desurvire. The motivation would have been to prevent absorption of external light. Bulovic teaches an optic device (column 10, line 17) comprising a pair of transparent electrodes, namely a transparent cathode and a transparent anode (column 10, lines 19-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to make the outer electrode (cathode) of Duggal in view of Desurvire out of transparent material, as taught by Bulovic. The motivation would have been to allow easy passage of light from the light source into the fiber.

Regarding claim 13, Duggal in view of Desurvire, further in view of Inditsky and Bulovic, teaches the limitations of the base claim 6. Duggal does not teach that the device is configured as a laser generator. Desurvire teaches an optical fiber (Figure 1, element 1) comprising a cladding (5) surrounding a core (elements 2,3,4) doped with a fluorescent material (column 1, line 15, and column 3, line 38) configured as a laser generator (column 1, lines 5,6). It would have been obvious to one of ordinary skill in the art at the time of the invention to configure the device of Duggal in view of Desurvire, further in view of Inditsky and Bulovic, as a laser generator, as taught by Desurvire. The motivation would have been to convey useful information (Desurvire, column 1, line 18).

Regarding claim 21, Duggal in view of Desurvire teaches the limitations of the base claim 16. Duggal also teaches that the light source comprises an additional outer layer (29). Duggal in view of Desurvire does not teach that the additional outer layer is reflective. Duggal in view of Desurvire also does not teach that the outer electrode (cathode 27) comprises transparent material. Inditsky teaches a light source (light guiding rod, LGR) with reflective cladding (page 14, paragraph 179). It would have been obvious to one of ordinary skill in the art to include the reflective outer layer of Inditsky in the light source of Duggal in view of Desurvire. The motivation would have been to prevent absorption of external light. Bulovic teaches an optic device (column 10, line 17) comprising a pair of transparent electrodes, namely a transparent cathode and a transparent anode (column 10, lines 19-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to make the outer electrode (cathode) of Duggal in view of Desurvire out of transparent material, as taught by Bulovic. The motivation would have been to allow easy passage of light from the light source into the fiber.

Claims 7 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duggal in view of Desurvire as applied to claims 1-5, 10-12, 14-20, and 23-26 above, and further in view of US Patent to Dejneka, number 6,324,326.

Regarding claim 7, Duggal in view of Desurvire teaches the limitations of the base claim 1. Duggal in view of Desurvire does not teach at least one mirror on each side of an optically pumped region of the optical cable, wherein one mirror is substantially opaque and the another mirror is at least partially reflective. Dejneka

teaches a fiber laser (Figure 2, element 30) comprising one mirror (60,62) on each side of an optically pumped region (Figure 2 and column 6, lines 37-53), wherein one mirror is substantially opaque (highly reflective mirror 60, column 6, lines 41-43) and the another mirror is at least partially transparent (partially transmissive mirror 62, column 6, lines 44,45). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the cavity comprising two mirrors, as taught by Dejneka, in the device of Duggal in view of Desurvire. The motivation would have been to obtain a desired output signal (Desurvire, column 1, lines 7-11).

Regarding claim 22, Duggal in view of Desurvire teaches the limitations of the base claim 16. Duggal in view of Desurvire does not teach positioning at least one mirror on each side of an optically pumped region of the optical cable, wherein one mirror is substantially opaque and the another mirror is at least partially reflective. Dejneka teaches a fiber laser (Figure 2, element 30) comprising one mirror (60,62) on each side of an optically pumped region (Figure 2 and column 6, lines 37-53), wherein one mirror is substantially opaque (highly reflective mirror 60, column 6, lines 41-43) and the another mirror is at least partially transparent (partially transmissive mirror 62, column 6, lines 44,45). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the positioning of a cavity comprising two mirrors, as taught by Dejneka, in the method of Duggal in view of Desurvire. The motivation would have been to obtain a desired output signal (Desurvire, column 1, lines 7-11).

Allowable Subject Matter

Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 8, Duggal in view of Desurvire teaches the limitations of the base claim 1. Duggal in view of Desurvire, either alone or in combination with the other prior art of record, does not disclose or render obvious the teaching that the efficiency of absorption of light in the core, the light produced by the light source, is a function of Pe/Pc (ratio of perimeter of envelope to perimeter of core).

Claim 9 is allowable over the prior art due to its dependence on examiner interpreted base claim 8.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMB

Brian Healy
Primary Examiner